

SUBCHAPTER J : CLOSURE AND POST-CLOSURE

§330.250. Applicability.

(a) The requirements in this subchapter apply to all MSWLF units or MSW sites as defined in §330.41 of this title (relating to Types of Municipal Solid Waste Facilities), except as provided in §330.3(b) and (c) of this title (relating to Applicability), in §330.251 of this title (relating to Closure Requirements for MSWLF Units That Stop Receiving Waste prior to October 9, 1991 and MSW Sites), in §330.252 of this title (relating to Closure Requirements for MSWLF Units That Receive Waste on or after October 9, 1991, But Stop Receiving Waste prior to October 9, 1993), and in subsection (b) of this section.

(b) The owner or operator of all existing MSWLF units or lateral expansions at a facility shall submit to the executive director for review and approval a certification of compliance with §330.300 of this title (relating to Airport Safety), §330.301 of this title (relating to Floodplains), or §330.305 of this title (relating to Unstable Areas), as applicable; the owner or operator who is unable to comply with any one of these sections shall complete final closure of the unit or facility by October 9, 1996, and conduct post-closure activities in accordance with all provisions of this subchapter. This certification shall be signed by the owner or operator of the unit or site and an independent registered professional engineer and submitted to the executive director no later than the effective date of this title. All applicable documentation for this certification shall be included in the submittal.

(c) The deadline for closure required by subsection (b) of this section may be extended up to two years if the owner or operator of the MSWLF unit or MSW site submits to the executive director for review and approval a request for an extension of the closure deadline that demonstrates to the satisfaction of the executive director that there is no alternative disposal capacity and there is no immediate threat to human health and the environment from the unclosed MSWLF unit or MSW site.

§330.251. Closure Requirements for MSWLF Units That Stop Receiving Waste Prior to October 9, 1991 and MSW Sites.

(a) The final cover system shall be composed of no less than two feet of soil. The first 18 inches or more of cover shall be of clayey soil, classification SC or CL as defined in the "Unified Soils Classification System" developed by the United States Army Corps of Engineers, compacted in layers of no more than six inches to minimize the potential for water infiltration. A CH soil may be used; however, this soil may experience excessive cracking and shall therefore be covered by a minimum of 12 inches of topsoil to retain moisture. Other types of soil may be used with prior written approval from the executive director.

(b) The final six inches of cover shall be of suitable topsoil that is capable of sustaining native plant growth and shall be seeded or sodded immediately following the application of the final cover in order to minimize erosion.

(c) Side slopes of the final cover for all above-ground disposal areas (aerial fills) shall not exceed a 25% grade (four feet horizontal to one foot vertical). Side slopes for the final cover in excess of 25% may be authorized by the executive director provided that controlled drainage such as flumes, diversion terraces, spillways, or other acceptable methods are incorporated into the final cover system design in the Site Development Plan and submitted to the executive director for review and approval. The final cover for the topmost portion of a unit or facility shall have a gradient of not less than 2.0% and not greater than 6.0%, and shall possess a sufficient minimum grade to preclude ponding of surface water when total fill height and expected subsidence are taken into consideration.

(d) No later than 60 days prior to the initiation of closure activities, the owner or operator shall submit the design and specifications for the closure of these MSWLF units or MSW sites to the executive director for review and approval. The final cover shall be installed no later than the effective date of this title.

(e) The owner or operator of these MSWLF units or MSW sites shall comply with the post-closure care maintenance requirements for this final cover, as detailed in §330.254(a) of this title (relating to Post-Closure Care Maintenance Requirements) for the duration of the post-closure period for these units or sites.

§330.252. Closure Requirements for MSWLF Units That Receive Waste on or after October 9, 1991, But Stop Receiving Waste prior to October 9, 1993.

(a) The owner or operator of these units shall comply with all final cover requirements as specified in §330.253 of this title (relating to Closure Requirements for MSWLF Units That Receive Waste on or after October 9, 1993 and MSW Sites).

(b) The owner or operator of these MSWLF units or facilities shall comply with all post-closure care maintenance requirements for the final cover of these units or facilities as specified in §330.254(a) of this title (relating to Post-Closure Care Maintenance Requirements).

(c) The final cover shall be completed within 180 days of the last receipt of wastes or by the effective date of this title, whichever is later. Owners or operators of MSWLF units that fail to complete final cover installation within this 180-day period will be subject to all requirements of §330.254(b) of this title (relating to Post-Closure Care Maintenance Requirements) unless otherwise specified.

§330.253. Closure Requirements for MSWLF Units That Receive Waste on or after October 9, 1993 and MSW Sites.

(a) The owner or operator of these MSWLF units or MSW sites shall comply with all requirements of this subchapter unless otherwise specified.

(b) Within 180 days of the last receipt of wastes for a MSWLF unit, the owner or operator shall complete the installation of a final cover system for that unit that is designed and constructed to

minimize infiltration and erosion. The final cover system shall be composed of no less than two feet of soil and consist of an infiltration layer overlain by an erosion layer as follows.

(1) For MSWLF units with a synthetic bottom liner, the infiltration layer shall consist of a minimum of 18 inches of earthen material with a coefficient of permeability no greater than 1×10^{-5} cm/sec overlain by a synthetic membrane that has a permeability less than or equal to the permeability of any bottom liner system. The minimum thickness of the synthetic membrane shall be 20 mils, or 60 mils in the case of high density polyethylene (HDPE), in order to ensure proper seaming of the synthetic membrane.

(2) For MSWLF units with no synthetic bottom liner, the infiltration layer shall consist of a minimum of 18 inches of earthen material with a coefficient of permeability less than or equal to the permeability of any constructed bottom liner or natural subsoil present. The coefficient of permeability of the infiltration layer shall in no case exceed 1×10^{-5} cm/sec, even though the coefficient of permeability of the constructed bottom liner or natural subsoil is greater than 1×10^{-5} or no data exist for the value(s) of the coefficient of permeability of the constructed bottom liner or natural subsoil; and

(3) For all MSWLF units, the erosion layer shall consist of a minimum of six inches of earthen material that is capable of sustaining native plant growth and shall be seeded or sodded immediately following the application of the final cover in order to minimize erosion.

(c) The executive director may approve an alternative final cover design that includes:

(1) an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in subsection (b)(1) or (2) of this section; and

(2) an erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in subsection (b)(3) of this section.

(d) The owner or operator of all MSWLF units or lateral expansions at a facility shall prepare a written final closure plan for submittal to the executive director for review and approval that describes the steps necessary to close all MSWLF units or MSW site at any point during the active life of the unit or MSW site in accordance with §330.254(a) or (b) of this title (relating to Post-Closure Care Maintenance Requirements), as applicable. The final closure plan, at a minimum, shall include the following information:

(1) a description of the final cover design and methods and procedures to be used to install the cover;

(2) an estimate of the largest area of the MSWLF unit or MSW site ever requiring a final cover at any time during the active life of the unit or MSW site;

(3) an estimate of the maximum inventory of wastes ever on-site over the active life of the unit or MSW site;

- (4) a schedule for completing all activities necessary to satisfy the closure criteria; and
- (5) a final contour map depicting the proposed final contours, establishing top slopes and side slopes, proposed surface drainage features, and protection of any 100-year floodplain;
- (6) a detailed written estimate, in current dollars, of the cost of hiring a third party to close the largest area of all MSWLF units ever requiring a final cover at any time during the active life when the extent and manner of its operation would make closure most expensive, as indicated by the closure plan. During the active life of the MSWLF unit, the owner or operator shall annually adjust the closure cost estimate and the amount of financial assurance for inflation in accordance with §§330.280-330.286 of this title (relating to Financial Assurance). The revised closure cost estimate shall be submitted to the executive director. Evidence of any additional financial assurance shall be provided to the executive director within 30 days after the annual anniversary date.

(e) Implementation of the Final Closure Plan is as follows.

- (1) The owner or operator of all existing MSWLF units and lateral expansions at a facility shall submit to the executive director for review and approval the final closure plan required by subsection (d) of this section and place a copy of the approved final closure plan in the operating record no later than the effective date of this title or by the initial receipt of waste, whichever is later. For all new MSWLF units or MSW sites, the final closure plan shall be submitted to the executive director for review and approval in conjunction with the Site Development Plan.
- (2) No later than 45 days prior to the initiation of closure activities for a MSWLF unit or MSW site, the owner or operator of the unit or MSW site shall provide written notification to the executive director of the intent to close the unit or MSW site and place this notice of intent in the operating record.
- (3) No later than 90 days prior to the initiation of a final facility closure, the owner or operator shall, through a public notice in the newspaper(s) of largest circulation in the vicinity of the facility, provide public notice for final facility closure. This notice shall provide the name, address, and physical location of the facility, the permit number, and the last date of intended receipt of waste. The owner or operator shall also make available an adequate number of copies of the approved final closure and post-closure plans for public access and review.
- (4) The owner or operator of all MSWLF units at a facility or of a MSW site shall begin final closure activities for each unit or site no later than 30 days after the date on which the unit or site receives the known final receipt of wastes or, if the unit or site has remaining capacity and there is a reasonable likelihood that the unit or site will receive additional wastes, no later than one year after the most recent receipt of wastes. A request for an extension beyond the one-year deadline for the initiation of final closure may be submitted to the executive director for review and approval and shall include all applicable documentation necessary to demonstrate that the unit or site has the capacity to receive additional waste and that the owner or operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed MSWLF unit or MSW site.

(5) The owner or operator of a MSWLF unit or MSW site shall complete final closure activities for the unit or site in accordance with the approved final closure plan within 180 days following the initiation of final closure activities as specified in paragraph (7) of this subsection. A request for an extension for the completion of final closure activities may be submitted to the executive director for review and approval and shall include all applicable documentation necessary to demonstrate that final closure will, of necessity, take longer than 180 days and all steps have been taken and will continue to be taken to prevent threats to human health and the environment from the unclosed MSWLF unit or MSW site.

(6) Following completion of all final closure activities for the MSWLF unit or MSW site, the owner or operator shall submit to the executive director for review and approval a documented certification, signed by an independent registered professional engineer, verifying that final closure has been completed in accordance with the approved final closure plan. The submittal to the executive director shall include all applicable documentation necessary for certification of final closure. Once approved, this certification shall be placed in the operating record.

(7) Upon notification to the executive director as specified in paragraph (2) of this subsection, the owner or operator of a MSWLF unit or MSW site shall post a minimum of one sign at the main entrance and all other frequently used points of access for the facility notifying all persons who may utilize the facility or site of the date of closing for the entire facility or site and the prohibition against further receipt of waste materials after the stated date. Further, suitable barriers shall be installed at all gates or access points to adequately prevent the unauthorized dumping of solid waste at the closed facility or site.

(8) Within 10 days after completion of final closure activities of a facility or site, the owner or operator shall submit to the executive director a certified copy of an "Affidavit to the Public" in accordance with the requirements of §330.7 of this title (relating to Deed Recordation) and place a copy of the affidavit in the operating record. In addition, the owner or operator of the closed facility or site shall record a certified notation on the deed to the facility or site property, or on some other instrument that is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and use of the land is restricted according to the provisions specified in §330.255 of this title (relating to Post-Closure Land Use). The owner or operator shall submit a certified copy of the modified deed to the executive director and place a copy of the modified deed in the operating record within the timeframe specified in this paragraph.

(9) The owner or operator of a MSWLF unit or MSW site may request permission from the executive director to remove the notation from the deed if all wastes are removed from the facility or site in accordance with §330.4(a) of this title (relating to Permit Required).

(10) Following receipt of the required final closure documents, as applicable, and an inspection report from the commission's district office verifying proper closure of the MSWLF facility or site according to the approved final closure plan, the executive director may acknowledge the termination of operation and closure of the facility or site and deem it properly closed. Post-closure

care maintenance shall begin immediately upon the date of final closure as approved by the executive director.

(f) Quality control testing documentation is as follows. Each owner or operator responsible for placing and compacting clay soils for the final cover infiltration layer shall test the 18 inches of compacted material for its coefficient of permeability at a frequency of no less than one test per surface acre of final cover. Permeability data shall be submitted to the executive director in a format stipulated in technical guidelines furnished by the executive director.

§330.254. Post-Closure Care Maintenance Requirements.

(a) Post-Closure Care Maintenance Requirements for MSWLF Units Closing Prior to October 9, 1993 and MSW Sites.

(1) For a minimum of the first five years after the completion of final closure, the owner or operator shall retain the right of entry to and maintain all rights-of-way of a closed MSWLF unit or MSW site in order to conduct periodic inspections of the closed unit or site. The owner or operator shall correct, as needed, erosion of cover material, lack of vegetative growth, leachate or methane migration, and subsidence or ponding of water on the unit or site. If any of these problems occur after the end of the five-year post closure maintenance period or persist for longer than the first five years of post-closure care maintenance, the owner or operator shall be responsible for their correction until the executive director determines that all problems have been adequately resolved. The executive director may reduce the post-closure maintenance period for MSW sites if all wastes and waste residues have been removed during closure.

(2) Any monitoring programs (ground-water monitoring, resistivity surveys, methane monitoring, etc.) in effect during the life of the MSWLF unit or MSW site shall be continued during the post-closure care maintenance period.

(b) Post-Closure Care Maintenance Requirements for MSWLF Units Closing On or After October 9, 1993.

(1) Immediately upon completion of final closure requirements for a MSWLF unit as approved by the executive director, the owner or operator shall conduct post-closure care maintenance for the unit or facility for 30 years, except as specified by paragraph (2)(A) or (B) of this subsection. Post-closure care maintenance shall consist, at a minimum, of the following.

(A) The owner or operator shall retain the right of entry to the closed unit and shall maintain all rights-of-way and conduct maintenance and/or remediation activities, as needed, in order to maintain the integrity and effectiveness of all final cover, site vegetation, and drainage control system(s), to correct any effects of settlement, subsidence, ponded water, erosion, or other events or failures detrimental to the integrity of the closed unit and to prevent any surface run-on and run-off from eroding or otherwise damaging the final cover system.

(B) The owner or operator shall maintain and operate the leachate collection system in accordance with the requirements in §330.200 and §330.201 of this title (relating to Design Criteria and Leachate Collection System, respectively). The executive director may allow the owner or operator to stop managing leachate if the owner or operator demonstrates to the approval of the executive director that leachate no longer poses a threat to human health and the environment.

(C) The owner or operator shall monitor ground water in accordance with the requirements of §§330.230-330.242 of this title (relating to Ground-Water Monitoring and Corrective Action) and maintain the ground-water monitoring system, if applicable.

(D) The owner or operator shall maintain and operate the gas monitoring system in accordance with the requirements of §330.54 of this title (relating to Technical Requirements of Part III of the Application).

(E) The owner or operator shall continue earth electrical resistivity surveys at the frequency stated in the approved Site Development Plan.

(2) The length of the post-closure care maintenance period may be:

(A) decreased by the executive director if the owner or operator submits to the executive director for review and approval a documented certification, signed by an independent registered professional engineer and including all applicable documentation necessary to support the certification, that demonstrates that the reduced period is sufficient to protect human health and the environment; or

(B) increased by the executive director if it is determined that the lengthened period is necessary to protect human health and the environment.

(3) The owner or operator of all existing MSWLF units or lateral expansions at a facility shall submit a post-closure plan to the executive director for review and approval and place a copy of the approved post-closure plan in the operating record no later than the effective date of this title or by the initial receipt of waste, whichever is later. For all new MSWLF units, the post-closure plan shall be submitted to the executive director for review and approval in conjunction with the Site Development Plan. The post-closure plan shall include, at a minimum, the following information:

(A) a description of the monitoring and maintenance activities required in paragraph (1) of this subsection for each unit, and the frequency at which these activities will be performed;

(B) the name, address, and telephone number of the office or person responsible for overseeing and/or conducting the post-closure care maintenance activities at the closed unit or facility during the post-closure period; and

(C) a description of the planned uses of any portion of the closed unit during the post-closure period in accordance with §330.255 of this title (relating to Post-Closure Land Use);

(D) a detailed written estimate, in current dollars, of the cost of post-closure care maintenance and any corrective action as described in the post-closure care plan or required by the commission. The owner or operator shall annually adjust the this estimate and the amount of financial assurance for inflation in accordance with §§330.280-330.286 of this title (relating to Financial Assurance). The revised estimate shall be submitted to the executive director. Evidence of any additional financial assurance shall be provided to the executive director within 30 days after the annual anniversary date.

§330.255. Post-Closure Land Use.

(a) The owner or operator shall submit any plans for proposed construction activities or structural improvements located on closed MSWLF units or MSW sites and not associated with approved solid waste disposal activities, with supporting documentation in accordance with subsection (b) of this section, to the executive director for review and approval.

(b) The owner or operator of the closed MSWLF unit or MSW site shall submit to the executive director for review and approval a documented certification, signed by an independent professional registered engineer and including all applicable documentation necessary to support the certification, that demonstrates that:

(1) any proposed construction activities or structural improvements on the closed MSWLF unit or MSW site shall not disturb the integrity and function of the final cover, any liner(s), all components of the containment system(s), and any monitoring system(s);

(2) the post-closure activities or improvements shall not increase or serve to create any potential threat to human health and the environment or that the proposed activities or improvements are necessary to reduce a potential threat to human health and the environment; and

(3) any proposed modification or replacement of existing construction activities or structural improvements on any closed MSWLF unit or MSW site that may disturb the integrity and function of any portion of the final cover, any liner(s), any components of the containment system(s), or any monitoring system(s) shall not increase nor serve to create any potential threat to human health and the environment.

(c) Any construction activities or structural improvements on any portion of a closed MSWLF unit or MSW site during the post-closure period shall, at a minimum, meet the following conditions.

(1) Automatic methane gas sensors designed to trigger an audible alarm when methane concentrations greater than 1% volume in air are detected shall be installed in all buildings and structures constructed on a closed MSWLF unit or MSW site.

(2) Enclosed subgrade construction is prohibited.

(3) All buildings and structures shall be constructed to mitigate the effects of gas accumulation and may include an active gas collection or vent system.

(4) Unauthorized pilings in or through the final cover or any liner are prohibited.

(5) Unauthorized borings or other penetrations of the final cover or any liner are prohibited.

(d) The executive director may approve other disturbances of a closed MSWLF unit or MSW site if the owner or operator submits to the executive director for review and approval a certification that demonstrates that the disturbance, including the removal of any waste, shall not cause harm to the integrity and function of the final cover, any liner(s), any components of the containment system(s), or any monitoring system(s) and shall not increase nor serve to create any potential threat to human health or the environment. This certification shall be signed by the owner or operator of the unit or facility and an independent registered professional engineer and shall include all applicable documentation necessary for the certification.

(e) The executive director may require that additional soil layers or building pads be placed on the final cover prior to the initiation of any construction activity or structural improvements in order to protect the integrity and function of the final cover, any liner(s), any components of the containment system(s), or any monitoring system(s).

(f) Any on-site permanent enclosed structures built within 1,000 feet of any waste-holding area for a closed MSWLF unit or MSW site shall, at a minimum, be designed and constructed in accordance with the following criteria in order to prevent gas migration into buildings and other structures.

(1) A geomembrane or equivalent system with very low gas permeability shall be installed between the slab and subgrade.

(2) A permeable layer of a minimum thickness of 12 inches, composed of an open-graded, clean aggregate material, shall be installed between the geomembrane and the slab or subgrade.

(3) A geotextile filter shall be utilized to prevent the introduction of fine soil or other particulate matter into the permeable layer.

(4) Perforated venting pipes shall be installed within the permeable layer and shall be designed to operate without clogging.

(5) The venting pipes shall be constructed to allow connection to an induced-draft exhaust system; and

(6) Automatic methane gas sensors shall be installed within the venting pipe and/or permeable gas layer and inside the building or any other structure in order to trigger an audible alarm when methane gas concentrations greater than 25% of the lower explosive limit are detected.

§330.256. Completion of Post-Closure Care Maintenance.

Following completion of the post-closure care maintenance period for each MSWLF unit or MSW site, the owner or operator shall submit to the executive director for review and approval a documented certification, signed by an independent registered professional engineer, verifying that post-closure care maintenance has been completed in accordance with the approved post-closure plan. The submittal to the executive director shall include all applicable documentation necessary for the certification of completion of post-closure care maintenance. Once approved, this certification shall be placed in the operating record.